# DELAYED TREE MORTALITY FOLLOWING FIRE IN WESTERN CONIFERS

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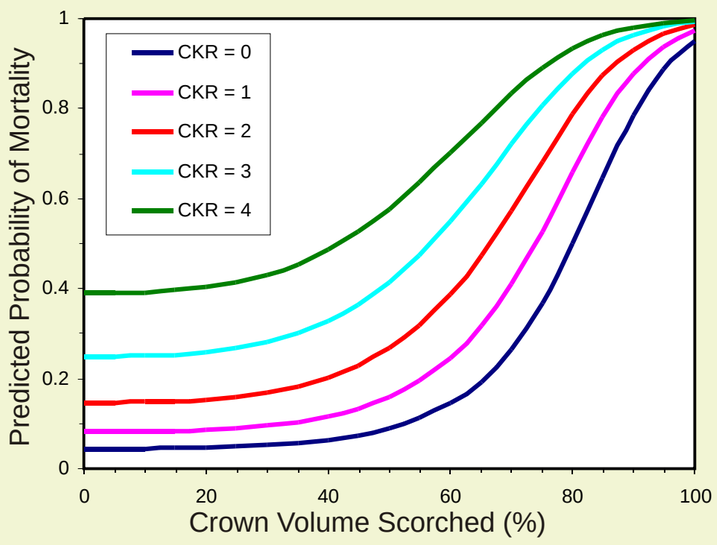
**Project Objective:** To develop new and updated post-fire mortality models for 16 western coniferous species.

## Project Summary & Justification:

Accurately estimating tree mortality following wildfires is an important aspect of post-fire forest management. Predicting the survival of trees after fire is controversial, and conflicting studies often lead to delays in implementing time-sensitive treatments. Better understanding is needed about what level of fire injury causes death, as well as an evaluation of published tree mortality models with independent data.

This project analyzes fire injury data on more than 19,000 trees from 82 wild and prescribed fires from 5 western states. We are testing existing tree mortality models and developing new ones where necessary. The new and modified mortality models will be incorporated into FOFEM, FVS-FFE, and BehavePlus.

**Tree Variables:**
- Crown volume scorched and killed
- Crown length scorched and killed
- DBH
- Bole char
- Ground char
- Cambium status
- Bark beetle attacks




**Species included:**
- Douglas-fir
- Ponderosa pine
- Lodgepole pine
- Jeffrey pine
- Sugar pine
- Whitebark pine
- Western larch
- Engelmann spruce
- Subalpine fir
- Grand fir
- White fir
- Red fir
- Western red cedar
- Western hemlock
- Incense cedar
- Juniper

## Deliverables:

Peer-reviewed journal articles and station publications:
~ Evaluation of the post-fire tree mortality model in current fire behavior and effects models. 09/06
~ Using bark char to predict cambium status. 11/06
~ Predicting mortality in western conifers. 09/07
~ How to predict post-fire delayed tree mortality. 12/07
Software updates to FFE-FVS, FOFEM, and BehavePlus